

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-6 (canceled)

7. (currently amended) A ~~device for sensing specific molecules, the device~~ sensor comprising:
a substrate;
a nanostructure nanoelement having first and second ends disposed on the
substrate; and
two electrodes disposed on the substrate connected by the nanostructure, wherein
at least one each electrode contacting an end of the nanotube, one
electrode including a surface layer including Pd and a junction between
the electrode and the nanostructure defines a sensing element for the
specific molecules.

8-40. (canceled)

41. (new) The sensor of claim 7, wherein the substrate includes a gate electrode disposed between the two electrodes and beneath the nanoelement.

42. (new) The sensor of claim 7, wherein the nanoelement is a nanowire.

43. (new) The sensor of claim 7, wherein the nanoelement is a nanotube.

44. (new) The sensor of claim 43, further comprising a network of interconnected nanotubes including the nanotube.

45. (new) The sensor of claim 7, wherein the nanoelement is an inorganic nanorod.

46. (new) A bio-molecule sensor comprising:

a substrate;
a nanotube having first and second ends disposed on the substrate; and
a pair of electrodes disposed on the substrate, each electrode contacting an end of the nanotube, one electrode comprising a surface layer including a molecule with an affinity for the bio-molecule.

47. (new) The bio-molecule sensor of claim 46 wherein the surface layer includes biotin.

48. (new) The bio-molecule sensor of claim 46 wherein the bio-molecule is streptavidin.

49. (new) The bio-molecule sensor of claim 46 wherein one electrode of the pair of electrodes comprises a layer of Au over a layer of Pd.

50. (new) A sensor for a specific molecule comprising:
- a substrate;
 - a nanoelement having first and second ends disposed on the substrate;
 - a pair of electrodes disposed on the substrate, each electrode contacting an end of the nanoelement; and
 - a protective layer over the nanoelement.
51. (new) The sensor of claim 50, wherein the nanoelement is a nanowire.
52. (new) The sensor of claim 50, wherein the nanoelement is an inorganic nanorod.
53. (new) The sensor of claim 50, wherein the nanoelement is a nanotube.
54. (new) The sensor of claim 53, further comprising a network of interconnected nanotubes including the nanotube.
55. (new) The sensor of claim 50, wherein the substrate includes a gate electrode disposed between the two electrodes and beneath the nanoelement.
56. (new) The sensor of claim 50, further comprising a surface layer on one electrode of the pair of electrodes, the surface layer having an affinity for the specific molecule.

57. (new) The sensor of claim 50, wherein the protective layer includes a polymer.

58. (new) A method of sensing a specific molecule comprising:

providing a sensor including a nanoelement disposed between two electrodes;

exposing the chemical sensor to an environment including the specific molecule;

and

measuring a change in a work function of one of the two electrodes in response to

the environment.

59. (new) The method of claim 58 wherein one of the electrodes includes a surface layer

having an affinity for the specific molecule.

60. (new) The method of claim 58 wherein providing the sensor further includes

providing a gate electrode disposed between the two electrodes and beneath the

nanoelement.

61. (new) The method of claim 60 further comprising applying a gate voltage to the gate

electrode to alter the Schottky barrier at a junction between the nanoelement and

the one of the two electrodes.

62. (new) The method of claim 58 wherein providing the sensor further includes

providing a protective layer over the nanoelement.

63. (new) The method of claim 58 wherein measuring the change in the work function includes measuring a Schottky barrier defined between the nanoelement and the one of the two electrodes.

64. (new) The method of claim 63 wherein measuring the Schottky barrier includes measuring a contact resistance.